

Title (en)  
Engine starter apparatus.

Title (de)  
Anlassvorrichtung für Verbrennungsmotor.

Title (fr)  
Appareil de démarrage pour moteur à combustion interne.

Publication  
**EP 0387073 A1 19900912 (EN)**

Application  
**EP 90302508 A 19900308**

Priority  
JP 5664989 A 19890308

Abstract (en)  
An engine starter apparatus being arranged such that a rotational force from an electric motor (2) is transmitted to an output rotary shaft through a planetary speed reduction gear(7). The number  $Z_s$  of teeth of a sun gear(4), the number  $Z_p$  of teeth of a planet gear (7), the number  $Z_i$  of teeth of an internal gear (6) and the number  $N$  of the planet gears satisfy the equation  $(Z_s + Z_i)/N$  an integer, and the pressure angle  $\alpha_{bi}$  of the engagement between the planet gear and the internal gear is arranged to be  $\cos^{-1}\{(Z_i - Z_p)/(Z_s + Z_p) \times \cos \alpha_{bs}\}$ , where  $\alpha_{bs}$  is the pressure angle of the engagement between the sun gear and the planet gear.

IPC 1-7  
**F02N 15/04**

IPC 8 full level  
**F02N 15/02** (2006.01); **F02N 15/04** (2006.01); **F16H 1/28** (2006.01)

CPC (source: EP KR US)  
**F02N 15/02** (2013.01 - KR); **F02N 15/046** (2013.01 - EP US); **F16H 1/28** (2013.01 - KR); **Y10T 74/13** (2015.01 - EP US); **Y10T 74/137** (2015.01 - EP US)

Citation (search report)  
[AD] WO 8802567 A1 19880407 - MITSUBISHI ELECTRIC CORP [JP]

Cited by  
US5760485A; WO9619662A1

Designated contracting state (EPC)  
DE FR GB IT

DOCDB simple family (publication)  
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